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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,168	02/13/2004	Ching-Fuh Lin	MR1035-1386	4472
4586	7590	07/22/2004	EXAMINER	
ROSENBERG, KLEIN & LEE 3458 ELLICOTT CENTER DRIVE-SUITE 101 ELLICOTT CITY, MD 21043			KOVAL, MELISSA J	
			ART UNIT	PAPER NUMBER
			2851	

DATE MAILED: 07/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/777,168

Applicant(s)

LIN ET AL.

Examiner

Melissa J Koval

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-22 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “different film coating condition” of claim 16, and the “different mirrors” of claims 21 and 22 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to because a reference numeral is not given for the “polarization selection device or a polarizer” immediately preceding the projection lens

30 described on page 7, lines 17 through 20, of the specification. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: No reference numeral is given for the "polarization selection device or a polarizer" immediately preceding the projection lens 30 described on page 7, lines 17 through 20, of the specification.

Appropriate correction is required.

Claim Objections

Claims 7, 8 and 16 are objected to because of the following informalities:

Claims 7 and 8 both depend from claim 1 and are identical. Applicant may have intended to have either claim 7 or claim 8 depend from a claim other than claim 1.

Appropriate correction is required.

In claim 16, the following phrase requires clarification to improve the grammar and meaning of the phrase, i.e. "formed by different film coating condition". It is not clear if the applicant intends to claim a single different film coating condition or plural film coating conditions.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-5, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Hatanaka et al. ('103).

Refer to Figures 1 and 2 of '103, for example.

Claim 1, 3 sets forth "A reflective type light valve projection device comprising (Column 3, lines 32 through 34.):

an incident light source for providing an incident light (white light source 10);

a first dichroic beam splitter/combiner located on the optical path of said incident light for reflecting a first primary color to separate said first primary color from a second and a third primary colors (See first dichroic mirror 11 for reflecting only the red (R) light component of the light emitted from the light source, column 3, lines 35 through 37.);

a second dichroic beam splitter/combiner located on the optical path of said incident light for separating the second and third primary colors passing through said first dichroic beam splitter/combiner (See second dichroic mirror 12 for reflecting only the blue (B) light component of the light transmitted through the first dichroic mirror 11, column 3, lines 37 through 40.);

three light valves including a first light valve (first liquid crystal plate 13), a second light valve (second liquid crystal plate 14) and a third light valve (third liquid crystal plate 15) and used as image modulating devices, said three light valves respectively modulating and reflecting the three primary colors separated by said first and second dichroic beam splitters/combiners to let said first and second dichroic beam splitters/combiners collect the modulated and reflected first and second primary colors (See column 3, lines 40 through 57.);

and a projecting lens for collecting the three primary colors reflected and transmitted by said first and second dichroic beam splitters/combiners after modulation to project out a full-color image (See optical lens system 17 and column 3, lines 58 through 62)."

With respect to claim 3, refer to Figure 10 of '103, for example. Figure 10 shows all of the elements claimed in claim 1 with different reference numerals as follows: light

source 1, dichroic mirrors 4A and 4B, first through third liquid crystal plates, 5A, 5B and 5C, respectively, and optical lens system 6.

Claim 3 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein said first and second dichroic beam splitters/combiners can be crosswise arranged." See column 1, lines 49 through 51, of '103.

Claim 4 sets forth: "The reflective type light valve projection device as claimed in claim 3, wherein said first, second and third light valves are so arranged that the optical path of said modulated and reflected third primary color, the optical path of said second primary color reflected by said second dichroic beam splitter/combiner after modulation, and the optical path of said first primary color reflected by said first dichroic beam splitter/combiner after modulation overlap mutually."

Claim 4 is met by Figure 10 of '103.

With respect to claim 5, also refer to the embodiment shown in Figure 10 of '103.

Claim 5 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein said first light valve (liquid crystal plate 5A), said second light valve (liquid crystal plate 5B) and said third light valve (liquid crystal plate 5C) are a red liquid crystal panel (5A modulates red), a green liquid crystal panel (5B modulates green) and a blue liquid crystal panel (5C modulates blue), respectively." See column 1, lines 59 through 61.).

Claim 15 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein the beam splitting and combining regions of said two dichroic beam splitters/combiners do not overlap each other." See either Figure 1 or 2 of '103.

Claims 1, 3-6, 12-16, and 18-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Scott et al. ('858).

Refer to Figure 4 of '858, for example.

Claim 1 sets forth: "A reflective type light valve projection device comprising (See column 6, lines 24 through 32.):

an incident light source for providing an incident light (lamp 310),

a first dichroic beam splitter/combiner located on the optical path of said incident light for reflecting a first primary color to separate said first primary color from a second and a third primary colors (dichroic filter 415R);

a second dichroic beam splitter/combiner located on the optical path of said incident light for separating the second and third primary colors passing through said first dichroic beam splitter/combiner (dichroic filter 415B);

three light valves including a first light valve (SLM 318B), a second light valve (SLM 318G) and a third light valve (SLM 318R) and used as image modulating devices, said three light valves respectively modulating and reflecting the three primary colors separated by said first and second dichroic beam splitters/combiners to let said first and second dichroic beam splitters/combiners collect the modulated and reflected first and second primary colors (Refer to column 4, lines 26 through 64, and column 6, lines 10 through 32.) ; and

a projecting lens (projection lens 324) for collecting the three primary colors reflected and transmitted by said first and second dichroic beam splitters/combiners after modulation to project out a full-color image."

Claim 3 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein said first and second dichroic beam splitters/combiners can be crosswise arranged." See the arrangement of dichroic filters 415R and 415B in Figure 4.

Claim 4 sets forth: "The reflective type light valve projection device as claimed in claim 3, wherein said first, second and third light valves are so arranged that the optical path of said modulated and reflected third primary color, the optical path of said second primary color relected by said second dichroic beam splitter/combiner after modulation, and the optical path of said first primary color reflected by said first dichroic beam splitter/combiner after modulation overlap mutually." Again refer to Figure 4 of '858.

Claim 5 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein said first light valve, said second light valve and said third light valve are a red liquid crystal panel, a green liquid crystal panel and a blue liquid crystal panel, respectively." Viewing Figure 4 of '858, the examiner observes that the order of the SLMs is red, green and blue in a counterclockwise arrangement around the projection optical system.

Claim 6 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein said first, second and third light valves are digital light processors." Refer to column 6, lines 25 through 28, of '858.

Claim 12 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein a reflecting mirror (mirror 410) can further be provided outside said light source to change the projection direction of light." Claims 13 and 14 are rejected for the same reasons already applied to rejected claim 12.

Claim 15 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein the beam splitting and combining regions of said two dichroic beam splitters/combiners do not overlap each other." Refer to column 7, lines 13 and 14 of '858.

Claim 16 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein the beam splitting and combining regions of said two dichroic beam splitters/combiners are on the same mirror formed by different film coating condition." Refer to column 4, lines 54 through 67, and column 5, lines 1 through 9, of '858.

Claim 18 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein the beam splitting and combining regions of said two dichroic beam splitters/combiners are on different mirrors assembled together." Dichroic filters 415R and 415B are assembled as shown by Scott et al. ('858).

Claim 19 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein an infrared filter (Mirror 410, a conventional cold mirror, reflects visible light and lets infrared (IR) and ultraviolet (UV) rays pass. Refer to column 4, lines 30 through 32.) can further be provided before said light entering said first and second dichroic beam splitters/combiners to separate infrared light from said three primary colors, thereby preventing infrared light from entering said first and second dichroic beam splitters/combiners and said light valves." Claims 20 through 22 are rejected for the same reasons as already rejected claim 19.

Claims 1, 3-5, 7-11, 15, 17, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Sampsell et al. ('239).

Refer to Figure 2 of '239 B1, for example. The "BACKGROUND OF THE INVENTION" clearly describes the embodiment of Figure 2.

Claim 1 sets forth: "A reflective type light valve projection device comprising (See column 1, lines 11 through 16.):

an incident light source for providing an incident light (light source 12),
a first dichroic beam splitter/combiner located on the optical path of said incident light for reflecting a first primary color to separate said first primary color from a second and a third primary colors (dichroic filter 54);

a second dichroic beam splitter/combiner located on the optical path of said incident light for separating the second and third primary colors passing through said first dichroic beam splitter/combiner (dichroic filter 56);

three light valves including a first light valve (LCD 42), a second light valve (LCD 40) and a third light valve (LCD 38) and used as image modulating devices, said three light valves respectively modulating and reflecting the three primary colors separated by said first and second dichroic beam splitters/combiners to let said first and second dichroic beam splitters/combiners collect the modulated and reflected first and second primary colors (Refer to column 1, lines 29 through 40.) ; and

a projecting lens (projection lens 48) for collecting the three primary colors reflected and transmitted by said first and second dichroic beam splitters/combiners after modulation to project out a full-color image."

Claim 3 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein said first and second dichroic beam splitters/combiners can be crosswise arranged." See the arrangement of dichroic filters 64 and 66 in Figure 3a of '239.

Claim 4 sets forth: "The reflective type light valve projection device as claimed in claim 3, wherein said first, second and third light valves are so arranged that the optical path of said modulated and reflected third primary color, the optical path of said second primary color relected by said second dichroic beam splitter/combiner after modulation, and the optical path of said first primary color reflected by said first dichroic beam splitter/combiner after modulation overlap mutually." Again refer to either Figure 2 or 3a of '239.

Claim 5 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein said first light valve, said second light valve and said third light valve are a red liquid crystal panel, a green liquid crystal panel and a blue liquid crystal panel, respectively." The examiner gives no patentable weight to the ordering of the LCDS and thus interprets LCD 42 to be the first light valve, LCD 40 to be the second light valve and LCD 38 to be the first light valve.

Claim 7 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein a polarization conversion device (PBS 52) is further disposed outside said incident light source, and said incident light first passes through said polarization conversion device before entering said first and second dichroic beam splitters/combiners." Sampsell et al. ('239 B1) teach a display device making use of a

dichroic color separation/combining system with polarization means immediately following the light source and immediately preceding the projection lens.

Claims 8 through 11 are rejected for the same reasons already applied to rejected claim 7.

Claim 15 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein the beam splitting and combining regions of said two dichroic beam splitters/combiners do not overlap each other." Refer to Figure 2 of '239.

Claim 17 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein the beam splitting and combining regions of said two dichroic beam splitters/combiners are on different mirrors glued together." Refer to Figure 3b and column 2, lines 38 through 52.

Claim 18 sets forth: "The reflective type light valve projection device as claimed in claim 1, wherein the beam splitting and combining regions of said two dichroic beam splitters/combiners are on different mirrors assembled together." Refer to either Figure 3a or 3b. Also refer to column 2, lines 49 through 52.

Allowable Subject Matter

Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art neither shows nor suggests a reflective type light valve projection

device having all of the elements of claim 2 and in particular: "said first light valve and said third light valve are symmetrically arranged with said first dichroic beam splitter/combiner as the reference plane, and said third light valve and said second light valve are symmetrically arranged with said second dichroic beam splitter/combiner as the reference plane." .

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Butterworth et al. U.S. Patent 6,498,632 B1 teach a color reflective ferroelectric liquid crystal light valve with three spatial light modulators and increased light throughput.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa J Koval whose telephone number is (571) 272-2121. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571)272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2851

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJK


Melissa Jan Koval
7/19/04